

## 2.2 Amplitude, Period and Frequency

### Amplitude and Frequency

-  $y = A \sin(Bt)$  ||  $y = A \cos(Bt)$

-  $|A|$  is the amplitude

$$P = \frac{2\pi}{B}$$

$$f = 1/P$$

### Frequency Index

-  $n$  is an arbitrary real number

$$f(t) = A \sin\left(\frac{2\pi \cdot n}{T} \cdot t\right), \quad f(t) = A \cos\left(\frac{2\pi \cdot n}{T} \cdot t\right)$$

-  $n$  is the frequency index

### Sum and Difference Identities

$$- \sin(a-b)t = \sin(at)\cos(bt) - \cos(at)\sin(bt)$$

$$- \sin(a+b)t = \sin(at)\cos(bt) + \cos(at)\sin(bt)$$

$$- \cos(a-b)t = \cos(at)\cos(bt) + \sin(at)\sin(bt)$$

$$- \cos(a+b)t = \cos(at)\cos(bt) - \sin(at)\sin(bt)$$

$$- \cos(2at) = 1 - 2\sin^2(at)$$

$$- \cos(2at) = 2\cos^2(at) - 1$$